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CASTING ALLOY ON A TITANIUM BASE

by

G. A. Kaplunovskiy, O. N. Magnitskiy,
et al.

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EDITED TRANSLATION

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CASTING ALLOY ON A TITANIUM BASE

By: G. A. Kaplunovskiy, O. N. Magnitskiy et al

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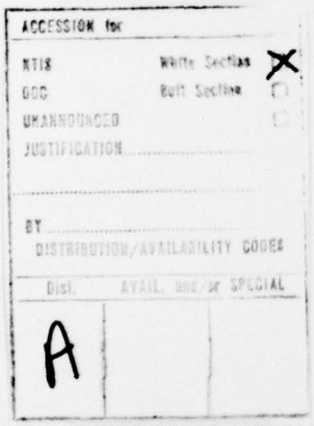

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А а	*А а*	A, a	Р р	*Р р*	R, r
Б б	*Б б*	B, b	С с	*С с*	S, s
В в	*В в*	V, v	Т т	*Т т*	T, t
Г г	*Г г*	G, g	У у	*У у*	U, u
Д д	*Д д*	D, d	Ф ф	*Ф ф*	F, f
Е е	*Е е*	Ye, ye; E, e*	Х х	*Х х*	Kh, kh
Ж ж	*Ж ж*	Zh, zh	Ц ц	*Ц ц*	Ts, ts
З з	*З з*	Z, z	Ч ч	*Ч ч*	Ch, ch
И и	*И и*	I, i	Ш ш	*Ш ш*	Sh, sh
Й й	*Й й*	Y, y	Щ щ	*Щ щ*	Shch, shch
К к	*К к*	K, k	Ъ ъ	*Ъ ъ*	"
Л л	*Л л*	L, l	Ы ы	*Ы ы*	Y, y
М м	*М м*	M, m	Ь ь	*Ь ь*	'
Н н	*Н н*	N, n	Э э	*Э э*	E, e
О о	*О о*	O, o	Ю ю	*Ю ю*	Yu, yu
П п	*П п*	P, p	Я я	*Я я*	Ya, ya

*ye initially, after vowels, and after ъ, ь; e elsewhere. When written as ё in Russian, transliterate as yë or ë. The use of diacritical marks is preferred, but such marks may be omitted when expediency dictates.

GREEK ALPHABET

Alpha	A	α		Nu	N	ν	
Beta	B	β		Xi	Ξ	ξ	
Gamma	Γ	γ		Omicron	O	o	
Delta	Δ	δ		Pi	Π	π	
Epsilon	E	ε		Rho	P	ρ	
Zeta	Z	ζ		Sigma	Σ	σ	ς
Eta	H	η		Tau	T	τ	
Theta	Θ	θ		Upsilon	T	υ	
Iota	I	ι		Phi	Φ	φ	
Kappa	K	κ		Chi	X	χ	
Lambda	Λ	λ		Psi	Ψ	ψ	
Mu	M	μ		Omega	Ω	ω	

RUSSIAN AND ENGLISH TRIGONOMETRIC FUNCTIONS

Russian	English
sin	sin
cos	cos
tg	tan
ctg	cot
sec	sec
cosec	csc
sh	sinh
ch	cosh
th	tanh
cth	coth
sch	sech
csch	csch
arc sin	$\sin^{-1}$
arc cos	$\cos^{-1}$
arc tg	$\tan^{-1}$
arc ctg	$\cot^{-1}$
arc sec	$\sec^{-1}$
arc cosec	$\csc^{-1}$
arc sh	$\sinh^{-1}$
arc ch	$\cosh^{-1}$
arc th	$\tanh^{-1}$
arc cth	$\coth^{-1}$
arc sch	sech^{-1}
arc csch	csch^{-1}
rot	curl
lg	log

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CASTING ALLOY ON A TITANIUM BASE

G. A. Kaplunovskiy, O. N. Magnitskiy, T. T. Nartova, B. B. Gulyayev, I. I. Kornilov, A. M. Podpalkin, V. P. Kuznetsov, and L. Ye. Solntseva

The invention pertains to the field of nonferrous metallurgy, namely to the search for high-strength light materials for making shaped castings.

Titanium alloys complexly alloyed with aluminum, zirconium, and molybdenum are known.

The purpose of the invention is to increase the strength properties of titanium alloys while retaining the high casting properties.

This is achieved by introducing praseodymium and hafnium into the alloy with the following ratio of components, %:

Aluminum	6-7.5
Zirconium	20.5-22.0
Molybdenum	2.7-4.5
Praseodymium	0.01-0.02
Hafnium	0.005-0.3
Titanium	base

The alloy in the molten state has the following properties:

Heat conductivity, kcal/m·h·deg	at 20-800°C	6.3-16.3
Thermal expansion coef., $1/deg \cdot 10^6$	at 20-800°C	8.4-10.0
Electrical resistance, $\Omega \cdot cm \cdot 10^6$	at 20-800°C	187-204
Elastic modulus, $kg/cm^2 \cdot 10^6$	at 20-800°C	1.23-9.81

Ultimate strength, kgf/mm^2	at 20°C	110-120
Yield limit, kgf/mm^2	at 20°C	94-108
Specific elongation, %	at 20°C	5-10
Impact strength, $kg \cdot cm/cm^2$	at 20°C	2-3.5
Brinell hardness, kgf/mm^2	at 20°C	265-285

Object of the Invention

The casting alloy on a titanium base, containing aluminum, zirconium, and molybdenum, is distinguished by the fact that with the purpose of increasing the mechanical properties, praseodymium and hafnium were introduced into the alloy with the following contents of components, %:

Aluminum	6-7.5
Zirconium	20.5-22.0

Molybdenum	2.7-4.5
Praseodymium	0.01-0.02
Hafnium	0.005-0.3
Titanium	base

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